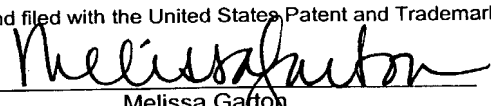
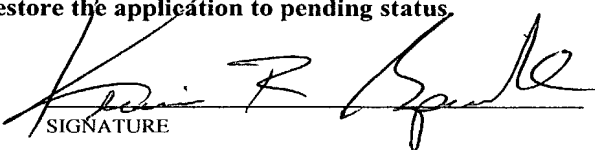


dc-304666 FORM PTO-1390 TRADEMARK OFFICE (REV 11-2000)		U.S. DEPARTMENT OF COMMERCE PATENT AND ATTORNEY'S DOCKET NUMBER 449122026300	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. § 371		U.S. APPLICATION NO. (If known, see 37 CFR 1.5) 10/089319 Not yet assigned	
INTERNATIONAL APPLICATION NO. PCT/DE00/03274	INTERNATIONAL FILING DATE September 20, 2000	PRIORITY DATE CLAIMED September 29, 1999	
TITLE OF INVENTION METHOD AND COMMUNICATIONS SYSTEM FOR CONTROLLING INSTANCES OF ACCESS TO TRANSMISSION RESOURCES OF A COMMUNICATIONS NETWORK (AS AMENDED)			
APPLICANT(S) FOR DO/EO/US Wilhelm AURES et al.			
<p>Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information</p> <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)). The submission must include items (5), (6), (9) and (21) indicated below. 4. <input checked="" type="checkbox"/> The US has been elected by the expiration of 19 months from the priority date (PCT Article 31). 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto (required only if not communicated by the International Bureau) b. <input checked="" type="checkbox"/> has been communicated by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input checked="" type="checkbox"/> An English language translation of the International Application under PCT Article 19 (35 U.S.C. 371(c)(2)). <ol style="list-style-type: none"> a. <input checked="" type="checkbox"/> is attached hereto. b. <input type="checkbox"/> has been previously submitted under 35 U.S.C. 154(d)(4). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)). <ol style="list-style-type: none"> a. <input type="checkbox"/> are attached hereto (required only if not communicated by the International Bureau). b. <input type="checkbox"/> have been communicated by the International Bureau. c. <input type="checkbox"/> have not been made, however, the time limit for making such amendments has NOT expired d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> An English language translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> An English language translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). <p>Items 11. to 16. below concern document(s) or information included:</p> <ol style="list-style-type: none"> 11. <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input checked="" type="checkbox"/> A FIRST preliminary amendment. 14. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 15. <input checked="" type="checkbox"/> A substitute specification. 16. <input type="checkbox"/> A change of power of attorney and/or address letter. 17. <input type="checkbox"/> A computer-readable form of the sequence listing in accordance with PCT Rule 13ter.2 and 35 U.S.C. 1.821 - 1.825. 18. <input type="checkbox"/> A second copy of the published international application under 35 U.S.C. 154(d)(4). 19. <input type="checkbox"/> A second copy of the English language translation of the international application under 35 U.S.C. 154(d)(4). 20. <input checked="" type="checkbox"/> Other items: 1) Application Data Sheet; 2) Int'l Search Report; 3) IPER; 4) Return receipt postcard. 			
CERTIFICATE OF HAND DELIVERY			
<p>I hereby certify that this correspondence is being hand filed with the United States Patent and Trademark Office in Washington, D.C. on March 29, 2002.</p> <div style="text-align: center; margin-top: 20px;">  Melissa Garton </div>			

U.S. APPLICATION NO. (if known, see 37 CFR 1.5)		INTERNATIONAL APPLICATION NO		ATTORNEY DOCKET NO	
Not yet assigned		PCT/DE00/03274		449122026300	
21. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492(a)(1)-(5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO.....\$1,040.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO.....\$890.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO.....\$740.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO but all claims did not satisfy provision of PCT Article 33(1)-(4)\$710.00 International preliminary examination fee (37 CFR 1.482) paid to USPTO and all claims satisfied provisions of PCT Article 33(1)-(4)\$100.00				CALCULATIONS PTO USE ONLY	
ENTER APPROPRIATE BASIC FEE AMOUNT =				\$890.00	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$0	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	- 20 =		x \$18.00	\$0	
Independent claims	- 3 =		x \$84.00	\$0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			+ \$280.00	\$0	
TOTAL OF ABOVE CALCULATIONS =				\$890.00	
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27. The fees indicated above are reduced by 1/2.				\$0	
SUBTOTAL =				\$890.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				+	\$0
TOTAL NATIONAL FEE =				\$890.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				+	\$40.00
TOTAL FEES ENCLOSED =				\$930.00	
				Amount to be refunded:	\$
				charged:	\$
a. <input checked="" type="checkbox"/> Please charge my Deposit Account No. 03-1952 (referencing Docket No. 449122026300) in the amount of \$930.00 to cover the above fees. A duplicate copy of this sheet is enclosed.					
b. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees that may be required, or credit any overpayment to Deposit Account No. 03-1952 (referencing Docket No. 449122026300).					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: Kevin R. Spivak Morrison & Foerster LLP 2000 Pennsylvania Avenue, N.W. Washington, D.C. 20006-1888					
			 SIGNATURE		
			Kevin R. Spivak Registration No. 43,148		
March 29, 2002					

100553 10/089319

JC15 Rec'd PCT/PTO 29 MAR 2002

CERTIFICATE OF HAND DELIVERY

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Melissa Garton

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In the application of:

Wilhelm AURES et al.

Serial No.: Not yet assigned

Filing Date: March 29, 2002

For: METHOD AND
COMMUNICATIONS SYSTEM
FOR CONTROLLING INSTANCES
OF ACCESS TO TRANSMISSION
RESOURCES OF A
COMMUNICATIONS NETWORK
(AS AMENDED)

Examiner: Not yet assigned

Group Art Unit: Not yet assigned

PRELIMINARY AMENDMENT

BOX PCT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination on the merits, please amend this application as follows:

In the Specification:

Please replace the Title with the following rewritten Title:

**METHOD AND COMMUNICATIONS SYSTEM FOR CONTROLLING INSTANCES
OF ACCESS TO TRANSMISSION RESOURCES OF A COMMUNICATIONS
NETWORK**

In the Claims:

What is claimed is:

1. (Amended) A method for controlling instances of access to transmission resources of a communications network for transferring information items, comprising:

checking an event of an instance of access to the communications network to determine if the amount of transmission resources required for the information transfer is currently available in the communications network;

determining the priority of the instance of access upon ascertaining an amount of currently available transmission resources sufficient for the information transfer; and

allocating the transmission resources required for the information transfer made in the communications network in the event of a high priority of the instance of access.

2. (Amended) The method as claimed in claim 1, wherein the transmission resources made available are allocated for the information transfer.

3. (Amended) The method as claimed in claim 1, further comprising:
determining at least one of the priority of the instance of access is using destination information
items transferred in the course of the current instance of access, and of information items
transferred in the course of the current instance of access and representing the type of
information items to be transferred, and

the priority of the allocated transmission resources by the type of information items transferred.

4. (Amended) The method as claimed in claim 3, wherein instances of access to the communications network for transferring information items with destination information items identifying an emergency call center have a high priority, the information items to be transferred to the emergency call center being assigned a high priority.

5. (Amended) The method as claimed in claim 1, further comprising allocating the transmission resources required for the information transfer made such that corresponding transmission resources assigned at least to one instance of access, having a low priority, for the information transfer are released or made available, or corresponding transmission resources allocated for the transfer of information items assigned a low priority are released or made available.

6. (Amended) The method as claimed in claim 1, wherein the required transmission resources are determined and made available randomly.

7. (Amended) The method as claimed in claim 1, wherein the transmission resources made available are allocated to the instances of access, having a high priority, for the information transfer, the allocated transmission resources being assigned a high priority.

8. (Amended) The method as claimed in claim 1, wherein the transmission resources are arranged between switching devices arranged in the communications network and/or between a switching device of the communications network and at least one front-end device arranged in the subscriber access area of the switching device.

9. (Amended) The method as claimed in claim 8, wherein
when the transmission resources required for the information transfer are available, an
identifier is formed for the corresponding front-end device between the at least one switching
device and the at least one assigned front-end device and stored in the corresponding switching
device, and

in the case of the identifier stored for the at least one front-end device, a reduced amount of the transmission resources arranged between the at least one switching device and the at least one front-end device is used or allocated for the transmission of information items having a low priority.

10. (Amended) The method as claimed in claim 9, wherein the identifier set for the at least one front-end device is reset or erased upon expiration of a prescribed time interval in which the reduced amount of transmission resources for the transfer of information items having a low priority is not exceeded.

11. (Amended) The method as claimed in claim 1, wherein the transmission resources are implemented by a prescribed number of trunks or by a prescribed number of time-division-multiplex-oriented transmission channels.

12. (Amended) A communications system for controlling instances of access to transmission resources of a communications network, comprising:

at least one switching device arranged in the communications network;
transmission resources assigned to the at least one switching device and allocated for transmitting information items; and

a device provided in the event of an instance of access to the transmission resources to check the current availability of the transmission resources required for the information transfer, wherein

a determining device, to determine the priority of the instance of access upon ascertaining an amount of currently available transmission resources insufficient for the information transfer, are arranged in the at least one switching device, and

the event of a determined high priority of the instance of access are provided in the at least one switching device and the transmission resources required for the information transfer are made available.

13. (Amended) The communications system as claimed in claim 12, wherein the device for rendering available the required transmission resources is configured such that the transmission resources made available are allocated to the instance of access for the information transfer.

14. (Amended) The communications system as claimed in claim 12, wherein the allocatable transmission resources assigned to the at least one switching device are arranged between at least one of the at least one switching device and at least one further switching device, and are arranged between the at least one switching device and at least one front-end device arranged in the subscriber access area of the switching device.

15. (Amended) The communications system as claimed in claim 12, wherein the determining device to determine the priority of the instance of access are configured such that the priority is determined with at least one of destination information items transferred in the course of the current instance of access, and with information items transferred in the course of the current instance of access and representing the type of the information items to be

transferred, the priority of the allocated transmission resources being determined during the information transfer by the type of transferred information items.

16. (Amended) The communications system as claimed in claim 12, wherein the device to render available the required transmission resources are configured such that at least one corresponding transmission resources assigned at least to one instance of access, having a low priority, for the information transfer are released or made available, or corresponding transmission resources allocated for the transfer of information items assigned a low priority are released or made available.

17. (Amended) The communications system as claimed in claim 12, wherein the transmission resources assigned to the switching device are implemented by trunks outgoing from the at least one switching device, or by outgoing, time-division-multiplex-oriented transmission channels.

In the Abstract:

Please replace the Abstract with the substitute Abstract attached hereto.

REMARKS

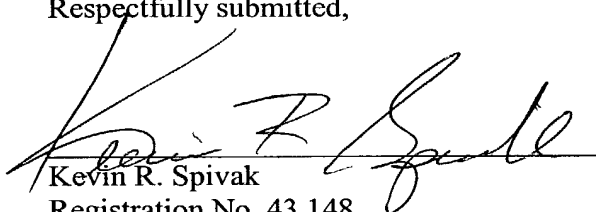
Amendments to the specification have been made and are submitted herewith in the attached Substitute Specification. A clean copy of the specification and a marked-up version showing the changes made are attached herewith. The claims and abstract have been amended in the attached Preliminary Amendment. All amendments have been made to place the application in proper U.S. format and to conform with proper grammatical and idiomatic English. None of the amendments herein are made for reasons related to patentability. No new matter has been added.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned "**Version with markings to show changes made**".

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 449122026300. However, the Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: March 29, 2002


Kevin R. Spivak
Registration No. 43,148

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[illegible]

In the Specification:

METHOD AND COMMUNICATIONS ARRANGEMENT SYSTEM FOR CONTROLLING INSTANCES OF ACCESS TO TRANSMISSION RESOURCES OF A COMMUNICATIONS NETWORK

~~Patent claims~~ **What is claimed is:**

characterized

—~~in that~~ **allocating** the transmission resources (~~VKA~~) required for the information transfer (~~not~~) are made available in the communications network (~~KN~~) in the event of a **determined** high priority of the instance of access.

3. (Amended) The method as claimed in claim 1 ~~or 2~~, **further comprising:**

$$x = \begin{pmatrix} x_1 \\ x_2 \\ x_3 \\ x_4 \\ x_5 \\ x_6 \\ x_7 \\ x_8 \end{pmatrix}, \quad y = \begin{pmatrix} y_1 \\ y_2 \\ y_3 \\ y_4 \\ y_5 \\ y_6 \\ y_7 \\ y_8 \end{pmatrix}$$

~~—in that during the information transfer the priority of the allocated transmission resources (VKAx) is determined by the type of information items transferred.~~

characterized wherein

5. (Amended) The method as claimed in ~~one of the preceding claims~~, **claim 1, further comprising**

that corresponding transmission resources (VKA_x) assigned at least to one instance of access, having a low priority, for the information transfer (v_{tel}) are released or made available, or

6. (Amended) The method as claimed in **claim 1, wherein** ~~one of the preceding claims,~~
~~characterized in that~~ the required transmission resources (VKAx) are determined and made
available randomly. *

8

~~characterized in that~~ the transmission resources (~~VKAx~~) made available are allocated to the instances of access, having a high priority, for the information transfer(~~vn~~et), the allocated transmission resources (~~VKAx~~) being assigned a high priority.

8. (Amended) The method as claimed in claim 1, wherein ~~one of the preceding claims,~~
~~characterized in that~~
the transmission resources (~~VKA1...z~~)

——are arranged between switching devices (~~LE1, 2~~) arranged in the communications network (~~KN~~) and/or

——between a switching device (~~LE2~~) of the communications network (~~KN~~) and at least one front-end device (~~RDLU~~) arranged in the subscriber access area of the switching device(~~LE2~~).

9. (Amended) The method as claimed in claim 8, wherein ~~characterized~~

~~in that~~ when the transmission resources required for the information transfer (~~vn~~et) are made available, an identifier, ~~representing the rendering available,~~ is formed for the corresponding front-end device (~~RDLU~~) between the at least one switching device (~~LE2~~) and the at least one assigned front-end device (~~RDLU~~) and stored in the corresponding switching device (~~LE~~) and

——~~in that~~ in the case of the identifier stored for the at least one front-end device(~~RDLU~~), a reduced amount of the transmission resources arranged between the at least one switching device (~~LE2~~) and the at least one front-end device (~~RDLU~~) ~~can be~~ is used or ~~can be~~ allocated for the transmission of information items having a low priority.

10. (Amended) The method as claimed in claim 9, wherein ~~characterized~~

~~in that~~ the identifier set for the at least one front-end device (~~RDLU~~) is reset or erased upon expiry expiration of a ~~prescribable~~ prescribed time interval in which the reduced amount of transmission resources for the transfer of information items having a low priority is not exceeded.

11. (Amended) The method as claimed in ~~one of the preceding claims,~~ claim 1, wherein
~~characterized~~

~~in that~~ the transmission resources (~~VKA1...z~~) are implemented by a prescribed number of trunks or by a prescribed number of time-division-multiplex-oriented transmission channels.

12. (Amended) A communications ~~arrangement~~ system for controlling instances of access to transmission resources of a communications network(~~KN~~), ~~having, comprising:~~
at least one switching device (~~LE1~~) arranged in the communications network;~~(KN)~~,
~~having~~

transmission resources (~~VKA1...z~~) ~~that are~~ assigned to the at least one switching device (~~LE1~~)
and ~~can be~~ allocated for transmitting information items;~~i~~ and

~~having means, a device~~ provided in the event of an instance of access to the transmission
resources(~~VKA1...z~~), ~~for checking~~ to check the current availability of the transmission
resources (~~VKA1...z~~) required for the information transfer(~~vnot~~), wherein

~~characterized~~

~~—in that means for a~~ determining device, to determine the priority of the instance of access upon
ascertaining an amount of currently available transmission resources (~~VKA1...z~~) insufficient for
the information transfer(~~vnot~~), ~~are arranged in the at least one switching device(LE1), and~~

~~—in that in the event of a determined high priority of the instance of access there are~~
provided in the at least one switching device (~~LE1~~) ~~means with the aid of which~~ and the
transmission resources (~~VKAx~~) ~~currently~~ required for the information transfer (~~vnot~~) are made
available.

13. (Amended) The communications ~~arrangement~~ system as claimed in claim 12,
~~characterized in that the means~~ wherein the device for rendering available the required
transmission resources ~~are is~~ configured in such a way that the
transmission resources (~~VKAx~~) made available are allocated to
the instance of access for the information transfer.

14. (Amended) The communications ~~arrangement~~ system as claimed in claim 12 ~~or 13~~,
~~characterized in that~~ wherein the allocatable transmission resources (~~VKA1...z~~) assigned to the
at least one switching device (~~LE1~~) are arranged between at least one of the at least one
switching device (~~LE1~~) and at least one further switching device, and(~~LE2~~),
~~and/or~~

are arranged between the at least one switching device (LE2) and at least one front-end device (RDLU) arranged in the subscriber access area of the switching device(LE2).

15. (Amended) The communications arrangement as claimed in one of claims 12 to 14, system as claimed in claim 12, characterized in that the means for determining wherein the determining device to determine the priority of the instance of access are configured in such a way that the priority is determined with the aid at least one of destination information items transferred in the course of the current instance of access, ~~and/or~~ and with the aid of information items transferred in the course of the current instance of access and representing the type of the information items (~~vtel, vnot~~) to be transferred, the priority of the allocated transmission resources (~~VKAx~~) being determined during the information transfer by the type of transferred information items(~~vtel, vnot~~).

16. (Amended) The communications arrangement as claimed in one of claims 12 to 15, system as claimed in claim 12, characterized in that the means for rendering wherein the device to render available the required transmission resources (~~VKAx~~) are configured in such a way that at least one corresponding transmission resources (~~VKAx~~) assigned at least to one instance of access, having a low priority, for the information transfer (~~vtel~~) are released or made available, or ~~in that~~ corresponding transmission resources (~~VKAx~~) allocated for the transfer of information items (~~vtel~~) assigned a low priority are released or made available.

17. (Amended) The communications arrangement system as claimed in one of claims 12 to 16, claim 12, characterized in that wherein the transmission resources (~~VKA1...z~~) assigned to the switching device (LE1,2) are implemented by means of trunks outgoing from the at least one switching device(LE1,2), or by means of outgoing, time-division-multiplex-oriented transmission channels.

In the Abstract:

Please replace the Abstract with the substitute Abstract attached hereto.

[illegible]

Abstract

In the case of an instance of access to transmission resources of a communications network for the transfer of information items, a check is made as to whether the amount of transmission resources required for the information transfer is currently available in the communications network. In the event of an insufficient amount, the priority of the instance of access is determined, the transmission resources required being made available in the event of a high priority of the instance of access. The emergency calls can advantageously be switched independently of the capacity utilization of the communications network.

GR 99 P 2992

METHOD AND COMMUNICATIONS SYSTEM FOR CONTROLLING
INSTANCES OF ACCESS TO TRANSMISSION RESOURCES OF A
COMMUNICATIONS NETWORK

5 CLAIM FOR PRIORITY

This application claims priority to International Application No. PCT/DE00/03274 which was filed in the German language on September 20, 2000.

10 TECHNICAL FIELD OF THE INVENTION

The present invention relates to a method and communications system for controlling instances of access to transmission resources of a communications network.

15 BACKGROUND OF THE INVENTION

Current telecommunications networks are formed from communications devices, switching devices and wire-bound or conducted and wireless connections connecting these devices, the communications devices - for example telephone terminals or personal computers - respectively assigned to individual subscribers being connected to the switching devices - also denoted as network nodes. Connections can be switched directly via the common used network nodes for the purpose of information transfer between communications devices connected to a common network node. In order to permit an information transfer between communications devices or subscribers connected to different network nodes, it is necessary to network the individual network nodes. The networking can be configured in such a way that the telecommunications network is split up into hierarchichal levels in a multistage fashion.

35 In the case of a connection setup instituted, for example, by a calling subscriber, after the reception and evaluation of dialing and/or destination information items by the network nodes connected to the

calling subscriber, a path must be determined through the telecommunications network to the dialed destination. That is, the corresponding network node of the destination subscriber or called subscriber
 5 connected thereto. The aim of this pathfinding is to determine as short as possible a path inside the telecommunications network, in which case as few network nodes as possible are to be traversed in the course of the connection to the dialed destination.
 10 The optimum utilization of the trunks of the telecommunications network constitutes a further aim of the pathfinding. The method for optimum pathfinding by means of a telecommunications network is also denoted as alternate routing.

15 The connection of two network nodes arranged in the telecommunications network is implemented via a limited number of mutually equivalent, wire-bound or wireless links or transmission channels. A plurality of
 20 equivalent links or transmission channels directed to the same destination are also denoted as a "group" or "trunk group". In current telecommunications networks based on digital transmission technologies, the trunk groups are formed by a specific number of time-
 25 division-multiplex-oriented transmission channels - also denoted as PCM highways.

Digital switching devices arranged in current telecommunications networks - for example a digital
 30 "EWSD" switching system from Siemens AG - are based on a digital switching network and a coordinated controller that is supported by peripheral processors. The switching system is of modular design. That is the line trunk groups for the external links - such as
 35 subscriber lines and trunks - are connected depending on request around a central core composed of coordination processor, coupling unit and clock generator. All useful connections are switched via the switching network, the pathfinding through the
 40 switching network being performed by the coordination

processor. The line trunk group forms the interface for the connection to the external lines. Line trunk groups of different configuration are present for connecting the various types of external lines such as subscriber
 5 lines and trunks - for example to further switching devices or communication networks. The line trunk groups respectively comprise a plurality of terminals - also denoted below as subscriber line units - for the purpose of matching the external lines, including the
 10 PCM coding, to a system-inherent interface.

The subscriber line unit assigned to a line trunk group concentrates the subscriber traffic of analog and digital subscriber lines connected thereto and of
 15 connected connecting cables for private branch exchanges. Subscriber line units can be arranged as a component of the network node locally in a switching device or detached therefrom in the vicinity of user groups. Detached subscriber line units are also denoted
 20 as front-end devices. An economic configuration of the subscriber access network with optimum transmission quality is achieved by means of the short subscriber lines achieved with the aid of front-end devices, and by means of the concentration of the subscriber traffic
 25 in the direction of the network node on digital and optical transmission links.

In current telecommunications networks, for example, those configured as a telephone network, a plurality of
 30 destinations configured as emergency call centers are set up, inter alia - for example police or firefighting units - which can be reached from every subscriber located in the telephone network by transferring destination or dialing information items or call
 35 numbers that are generally standard across the country. Current telephone networks are configured in such a way that a requested emergency call connection is passed on or routed to the respective emergency call center assigned to the subscriber, for example the emergency
 40 call center situated most closely locally to the

calling subscriber. Since - disregarding misuse or error - emergency call connections always arise from an acute emergency situation of a subscriber or a plurality of subscribers, such emergency call connections are to be switched inside the telephone networks with highest priority to the appropriate emergency call center. This requirement holds for normally utilized telephone networks, and also when the telephone network is fully utilized by normal telephone traffic because of specific events and/or dead lines. A typical event of this type is, for example, the turn of the year, when a full utilization of the transmission resources provided by the telephone network is reached owing to the transfer of a large number of "congratulatory telephone calls", but at the same time there is an increased demand for high-priority emergency call connections that are to be switched - for example reporting personal injury and material damage caused by fireworks.

In current telephone networks, a portion of the transmission resources provided by the telephone network and reserved for switching emergency call connections. Thus, for example, a prioritized handling of emergency call connections to be switched to emergency call centers is achieved by the performance parameter of "Selective Circuit Reservation Control" implemented in the switching devices and/or switching centers, a number of links or connecting channels being kept free in specific trunk groups such that the entire trunk group is available only connections with specific traffic criteria - for example emergency call connections.

It is disadvantageous that the permanent reservation of transmission resources achieved thereby explicitly limits for emergency call connections the transmission resources provided inside the telecommunications network. This is particularly true for information transfer whenever reserved transmission resources are

5 - that is all transmission resources provided for connections not of high priority are busy - only the reserved transmission resources are available for

GR 99 P 2992

high-priority emergency calls that are to be switched, but this in turn signifies a limitation.

In the case of alternatively configured telecommunications networks, it is disadvantageously possible to make use of the transmission resources of a telecommunications network that are reserved for emergency calls only after a previously performed, administrative intervention in the telecommunications network. Such an administrative intervention constitutes, for example, setting the state of emergency or a similar identifier in the respective switching devices.

SUMMARY OF THE INVENTION

In one embodiment of the invention, there is switching of emergency call connections inside telecommunications networks and, in particular, a switching of high-priority connections such as, for example, emergency call connections to appropriate emergency call centers independently of the respective utilization of the transmission resources provided by the communications network.

In another embodiment of the invention, there is a method for controlling instances of access to transmission resources of a communications network for transferring information items. A check is made in the event of an instance of access to the communications network as to whether the amount of transmission resources required for the information transfer is currently available in the communications network. An essential aspect of the invention is that the priority of the instance of access is determined upon ascertaining an amount of currently available transmission resources insufficient for the information transfer, and in the transmission

resources required for the information transfer are made available in the communications network in the event of a determined high priority of the instance of access.

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Another essential advantage of the invention is, for example, high-priority connection requests - for example emergency calls - arising from an acute emergency situation of a subscriber or a plurality of subscribers are switched to the appropriate destination - for example an emergency call center - within the range of technical options and independently of the current utilization of the transmission resources of the communications network. Given sufficient available transmission resources, transmission resources that can be switched are handled similarly inside the communications network. As a further advantage, the emergency call connections are switched with highest priority to the destination, or to the emergency call center, in an independent fashion, that is to say without administrative intervention - for example by setting in the switching devices an identifier representing the state of emergency. According to the invention no reservation of transmission resources is required for emergency call connections, and, hence, no limitation of transmission resources.

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The priority of the instance of access is advantageously determined with the aid of destination information items transferred in the course of the current instance of access, and/or of information items transferred in the course of the current instance of access and representing the type of information items to be transferred. During the information transfer the priority of the allocated transmission resources can be determined by the type of information items transferred. It is possible as a result of this advantageous configuration to derive priority of an

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instance of access to the transmission resources from signaling and/or dialing information items transferred when a connection is being set up, for example. Alternatively, the priority of the instance of access
5 can be derived from an identifier representing, for example, the type of traffic of the information items to be transferred.

In accordance with another advantageous aspect, the
10 transmission resources are arranged between switching devices arranged in the communications network and/or between a switching device of the communications network and at least one front-end device arranged in the subscriber access area of the switching device.
15 When the transmission resources required for the information transfer are made available, an identifier, representing the rendering available, is formed for the corresponding front-end device between the at least one switching device and the at least one front-end device
20 and stored in the corresponding switching device. In the case of the identifier stored for the at least one front-end device, a reduced amount of the transmission resources arranged between the at least one switching device and the at least one front-end device can be
25 used or can be allocated for the transmission of information items having a low priority. This advantageous aspect reduces the probability that low-priority connections carried over front-end devices must be automatically triggered in the course of the
30 switching of high-priority connections - for example emergency call connections.

BRIEF DESCRIPTION OF THE DRAWING

The invention is explained below in more detail with
35 the aid of a diagram, in which:

Figure 1 shows two switching devices arranged in a communications network.

Figure 1 shows two switching devices LE1,2 that are functionally of similar design and are arranged in a communications network KN configured as a telephone network. The switching devices LE1,2 represented can be implemented, for example, in each case by an "EWSD" digital, electronic dialing system from Siemens AG. Run to a line trunk group LTG arranged in the first switching device LE1 is an incoming trunk group LB1, that comprises a plurality of time-division-multiplex-oriented transmission channels VKE1...z aligned in the direction of first switching device LE1, and via which the first switching device LE1 is connected to the higher-order communications network or telephone network KN. A plurality of subscribers and/or communications terminals are connected to further line trunk groups LTG, arranged in the first switching device LE1, for example via a digital subscriber line unit DLU or via separate subscriber connection networks ACCESS. Illustrated in the block diagram in lieu of a plurality of communications terminals is a communications terminal KE - for example an ISDN telephone terminal - that is assigned to a subscriber A TLNA and is connected to the first switching device LE1 via the digital subscriber line unit DLU.

The first switching device LE1 is connected to a line trunk group LTG arranged in the second switching device LE2 via a further line trunk group LTG and via an outgoing trunk group LBA connected to said line trunk group. The trunk group LBA outgoing from the first switching device LE1 comprises a plurality of time-division-multiplex-oriented transmission channels VKA1...z aligned in the direction of the second switching device LE2, the outgoing trunk group LBA representing the primary route of connections implemented between the first and the second switching device LE1,2. The first switching device LE1 can be connected to the second switching device LE2 via further outgoing trunk groups - not illustrated - respectively representing an overflow route, as well as via additional switching

devices - also denoted as transit switching devices,
not illustrated.

An emergency call center NOT - for example a police or
5 firefighting unit - is connected to the second
switching device LT2 via k trunks or transmission
channels VL1...k, the k trunks VL1...k being connected via
a front-end device, for example a digital subscriber
line unit DLU, to a line trunk group LTG arranged in
10 the second switching device LE2. Arranged in the two
switching devices LE1,2 illustrated in the block
diagram is a central switching network SN, connected to
the respective line trunk groups LTG, for switching
connections and/or connection requests incoming and
15 outgoing at the respective switching devices LE1,2. The
central switching network SN is connected to a
centrally arranged, coordinating control unit CP, which
is assigned a database DB in each case. In the event of
connection requests incoming at the switching devices
20 LE1,2, the respective control unit CP evaluates in
functional relationship with the respective assigned
database DB signaling and/or dialing information items
transferred in the course of the connection setup, and
controls the switching or switching through of the
25 transmission channels VKE1...z, VKA1...z, incoming and
outgoing at the respective switching device LE1,2, as a
function of the respectively determined dialing or
destination information items - this evaluation and
switching process is also denoted as "digit evaluation
30 and routing".

In each database DB assigned to a switching device
LE1,2 and provided for the digit evaluation, the
destinations respectively representing an emergency
35 call center NOT are marked by an appropriate
identifier, an identifier representing the traffic type
of emergency call being assigned to a connection that
is incoming at a switching device LE1,2 and is to be
switched at an emergency call center NOT. For each
40 connection switched or switched through via a switching

device LE1,2, this identifier representing the traffic type transferred via the respective connection is stored in the appropriate switching device LE1,2, for example in a further database - not illustrated -
5 assigned to the central control unit CP. For example, connections switched or switched through to an emergency call center NOT via a switching device LE1,2 or via a transit switching device have the identifier "traffic type: emergency call". If a requested
10 connection can be successfully switched or switched through to the dialed destination inside a switching device LE1,2, the switching or switching-through operation is performed independently of the traffic type determined during the connection setup, that is to
15 say independently of whether the destination has an identifier representing an emergency call center, or not.

It may be assumed for the further exemplary embodiment
20 that the subscriber A TLNA requests via the communications terminal KE an emergency call connection (VN) for the purpose of transferring an emergency call to the nearest emergency call center NOT. It may also be assumed that trunk groups LBA outgoing from the
25 first switching device LE1 in the direction of the second switching device LE2, that is transmission channels VKA1...z directed via the primary route and, possibly, via existing overflows in the direction of second switching device LE2 are busy. For example, a
30 normal telephone connection vtel is run from the telephone network KN to the first switching device LE1 via the xth transmission channel VKEx arranged in the incoming trunk group LBE. The telephone connection vtel is switched through or passed on in the direction of
35 the second switching device LE2 to the xth transmission channel VKAx(vtel) inside the outgoing trunk group LBA of the primary route via the switching network SN arranged in the first switching device LE1. The telephone connection vtel run to the second switching
40 device LE2 is passed on via the switching network SN to

a communications terminal and/or subscriber - not illustrated - connected to the second switching device LE2.

5 During evaluation of the destination information items transmitted by the subscriber A TLNA - for example dial digits identifying the emergency call center - by means of the control unit CP arranged in the first switching device LE, the emergency call center NOT connected to
10 the second switching device LE2 is, for example, determined as the nearest emergency call center. It is not possible on the basis of the described utilization of the communications network KN to determine in the course of the connection setup any free link or any
15 free transmission channel VBA1...z inside the trunk group LBA outgoing within the framework of the primary route and the overflows. This state is also denoted as "congested". According to the invention, in the case of a connection requested in the "congested" state the
20 traffic type of the connection to be switched is determined by evaluating the destination information items. If a connection to be switched is not assigned the identifier "traffic type: emergency call", or not assigned an alternative identifier representing a high
25 priority - not described in more detail in this exemplary embodiment - the requested connection is rejected. The connections not having the identifier "traffic type: emergency call" are also denoted below as non-emergency call connections. The rejection of
30 non-emergency call connections in the "congested" state is achieved, for example, by applying a "congested tone" representing the "congested" state and by revertive clearing of the initiated connection setup. If, however, during a connection setup a connection
35 having the identifier "traffic type: emergency call" is determined when evaluating the signaled destination information items, an "automatic triggering mechanism" is started in the course of which the connections currently being conducted in the outgoing trunk group
40 LBA of the primary route are analyzed. According to the

invention, there is randomly determined inside the outgoing trunk group LBA of the primary route a transmission channel - here the xth VKAx, for example - via which a current non-emergency call connection -
 5 here the normal telephone connection vtel - is carried. The randomly determined non-emergency call connection vtel, or the determined xth transmission channel VKAx is subsequently cleared automatically by the first switching device LE1. An appropriate message
 10 or a suitable signaling tone can advantageously be transferred to the subscribers of the automatically cleared connection VKAx.

The emergency call connection vnot requested by the
 15 subscriber A TLNA is subsequently switched through via the cleared transmission channel VKAx and marked with the (transient) identifier "traffic type: emergency call". Note that the identifier "traffic type: emergency call" is not signaled between the switching
 20 devices LE1,2; in each switching device LE1,2, the identifier "traffic type: emergency call" can be derived from emergency call connections to be switched with the aid of the transferred destination and/or dialing information items from the information items
 25 stored in the respective database DB.

In the second switching device LE2, the emergency call connection vnot run up via the cleared transmission channel VKAx is passed on to the connected emergency
 30 call center NOT. The emergency call connection vnot switched through by means of the "automatic triggering mechanism" is illustrated in the block diagram by a dashed arrow. In this exemplary embodiment, the emergency call center is connected to the second
 35 switching device LE2 via k trunks VL1...k. The k trunks VL1...k are each relevant to emergency calls in this variant connection. For the case in which all k trunks VL1...k are busy - for example owing to a plurality of incoming emergency calls and/or telephone connections
 40 outgoing from the emergency call center NOT - it is

possible in the case of a further emergency call
 connection vnot initiated, for example, by the
 subscriber A TLNA that none of the connection currently
 carried via the k trunks VL1...k are automatically
 5 cleared, such that in this case the emergency call
 connection v not initiated by the subscriber A TLNA and
 passed on to the second switching device LE2 via the
 cleared transmission channel VKAx cannot in principle
 be passed on to the emergency call center NOT.

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In accordance with a further variant connection -
 illustrated by dashed lines in the block diagram - the
 emergency call center NOT is connected to the switching
 network SN of the second switching device LE2 via a
 15 front-end device RDLU having concentration properties -
 for example via a detached subscriber line unit - and
 via a line trunk group LTG. Further communications
 devices and/or subscribers not assigned to the
 emergency call center NOT can also be connected to the
 20 front-end device RDLU - this not being illustrated. The
 connection between the second switching device LE2 and
 the front-end device RDLU can be implemented, for
 example, by means of a trunk group comprising a
 plurality of transmission channels, the switching of
 25 the emergency call connections vnot incoming at the
 second switching device LE2 to the emergency call
 center NOT being performed in the described way
 according to the invention. If transmission channels
 carried from the second switching device LE2 to the
 30 front-end device RDLU are busy, according to the
 invention a transmission channel of a non-emergency
 call connection currently carried to the front-end
 device RDLU is cleared, and subsequently the emergency
 call connection vnot to be switched is passed on via
 35 the cleared transmission channel to the front-end
 device RDLU and to the emergency call center NOT
 connected thereto.

In accordance with an advantageous embodiment, an
 40 identifier representing a "transient emergency state"

can be set for the front-end device RDLU connected to the second switching device LE2, and stored in the second switching device LE2 - for example in the database DB. If in the course of passing on emergency call connections vnot via the front-end device RDLU to the emergency call center NOT, a non-emergency call connection is automatically cleared, an identifier "transient emergency state" is set and stored by the second switching device LE2 for this front-end device RDLU. The result of setting the identifier "transient emergency state" is that, in a fashion controlled by the second switching device LE2, a specific maximum percentage of the transmission channels carried from the second switching device LE2 in the direction of or to the front-end device RDLU is still used to transfer "non-emergency call connections". By contrast, emergency call connections vnot incoming at the second switching device LE2 can be switched via transmission channels to the emergency call center NOT via the front-end device RDLU. Setting the identifier "transient emergency state" reduces the probability that non-emergency call connections carried via front-end devices RDLU need to be automatically cleared in the course of switching high-priority emergency call connections. The identifier "transient emergency state" set in the second switching unit LE2 for a connected front-end device RDLU is advantageously reset independently by the switching device LE2, for example when the maximum percentage of busy transmission channels for transferring non-emergency call connections is undershot for a prescribable time interval. The precritable time interval can comprise, for example, 90 seconds, which corresponds to the mean holding time.

Description

Method and communications arrangement for controlling
instances of access to transmission resources of a
5 communications network

Current telecommunications networks are formed from
communications devices, switching devices and wire-
bound or conducted and wireless connections connecting
10 these devices, the communications devices - for example
telephone terminals or personal computers -
respectively assigned to individual subscribers being
connected to the switching devices - also denoted as
network nodes. Connections can be switched directly via
15 the common used network nodes for the purpose of
information transfer between communications devices
connected to a common network node. In order to permit
an information transfer between communications devices
or subscribers connected to different network nodes, it
20 is necessary to network the individual network nodes.
The networking can be configured in such a way that the
telecommunications network is split up into
hierarchichal levels in a multistage fashion.

25 In the case of a connection setup instituted, for
example, by a calling subscriber, after the reception
and evaluation of dialing and/or destination
information items by the network nodes connected to the
calling subscriber, a path must be determined through
30 the telecommunications network to the dialed
destination, that is to say to the corresponding
network node of the destination subscriber or called
subscriber connected thereto. The aim of this
pathfinding is to determine as short as possible a path
35 inside the telecommunications network, in which case as
few network nodes as possible are to be traversed in
the course of the connection to the dialed destination.

The optimum utilization of the trunks of the telecommunications network constitutes a further aim of the pathfinding. The method for optimum pathfinding by means of a telecommunications network is also denoted
5 as alternate routing.

The connection of in each case two network nodes arranged in the telecommunications network is implemented via a limited number of mutually
10 equivalent, wire-bound or wireless links or transmission channels. A plurality of equivalent links or transmission channels directed to the same destination are also denoted as a "group" or "trunk group". In current telecommunications networks based on
15 digital transmission technologies, the trunk groups are formed by a specific number of time-division-multiplex-oriented transmission channels - also denoted as PCM highways.

20 Digital switching devices arranged in current telecommunications networks - for example a digital "EWSD" switching system from Siemens AG - are based on a digital switching network and a coordinated controller that is supported by peripheral processors.
25 The switching system is of modular design, that is to say the line trunk groups for the external links - such as subscriber lines and trunks - are connected depending on request around a central core composed of coordination processor, coupling unit and clock
30 generator. All useful connections are switched via the switching network, the pathfinding through the switching network being performed by the coordination processor. The line trunk group forms the interface for the connection to the external lines. Line trunk groups
35 of different configuration are present for connecting the various types of external lines such as subscriber lines and trunks - for example to further switching devices or communication networks. The line trunk

- 3 -

groups respectively comprise a plurality of terminals - also denoted below as subscriber line units - for the purpose of matching the external lines, including the PCM coding, to a system-inherent interface.

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The subscriber line unit assigned to a line trunk group concentrates the subscriber traffic of analog and digital subscriber lines connected thereto and of connected connecting cables for private branch
10 exchanges. Subscriber line units can be arranged as a component of the network node locally in a switching device or detached therefrom in the vicinity of user groups. Detached subscriber line units are also denoted as front-end devices. An economic configuration of the
15 subscriber access network with optimum transmission quality is achieved by means of the short subscriber lines achieved with the aid of front-end devices, and by means of the concentration of the subscriber traffic in the direction of the network node on digital and
20 optical transmission links.

In current telecommunications networks, for example, those configured as a telephone network, a plurality of destinations configured as emergency call centers are
25 set up, inter alia - for example police or firefighting units - which can be reached from every subscriber located in the telephone network by transferring destination or dialing information items or call numbers that are generally standard across the country.
30 Current telephone networks are configured in such a way that a requested emergency call connection is passed on or routed to the respective emergency call center assigned to the subscriber, for example the emergency call center situated most closely locally to the
35 calling subscriber. Since - disregarding misuse or error - emergency call connections always arise from an acute emergency situation of a subscriber or a plurality of subscribers, such emergency call connections are to be switched inside the telephone

- 4 -

networks with highest priority to the appropriate emergency call center. This requirement holds for normally utilized telephone networks, but it also holds, in particular, when the telephone network is
 5 fully utilized by normal telephone traffic because of specific events and/or dead lines. A typical event of this type is, for example, the turn of the year, when a full utilization of the transmission resources provided by the telephone network is reached owing to the
 10 transfer of a large number of "congratulatory telephone calls", but at the same time there is an increased demand for high-priority emergency call connections that are to be switched - for example reporting personal injury and material damage caused by
 15 fireworks.

In current telephone networks it is known for the purpose of switching emergency call connections to reserve a portion of the transmission resources
 20 provided by the telephone network. Thus, for example, a prioritized handling of emergency call connections to be switched to emergency call centers is achieved by the performance parameter of "Selective Circuit Reservation Control" implemented in the switching
 25 devices and/or switching centers, a number of links or connecting channels being kept free in specific trunk groups such that the entire trunk group is available only connections with specific traffic criteria - for example emergency call connections.

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It is disadvantageous that the permanent reservation of transmission resources achieved thereby explicitly limits for emergency call connections the transmission resources provided inside the telecommunications
 35 network, in particular for information transfer, particularly whenever reserved transmission resources are not currently being used for transferring emergency calls. Optimum use of the transmission resources provided is thereby impossible. Moreover, in the event

method according to the invention consists in that the priority of the instance of access is determined upon ascertaining an amount of currently available transmission resources insufficient for the information transfer, and in that the transmission resources required for the information transfer are made available in the communications network in the event of a determined high priority of the instance of access.

10 The essential advantage of the method according to the invention consists in that, for example, high-priority connection requests - for example emergency calls - arising from an acute emergency situation of a subscriber or a plurality of subscribers are guaranteed
15 to be switched to the appropriate destination - for example an emergency call center - within the range of technical options and independently of the current utilization of the transmission resources of the communications network. Given sufficient available
20 transmission resources, all transmission resources that can be switched are handled similarly inside the communications network. As a further advantage, the emergency call connections are switched with highest priority to the destination, or to the emergency call
25 center, in an independent fashion, that is to say without administrative intervention - for example by setting in the switching devices an identifier representing the state of emergency. Carrying out the method according to the invention requires no
30 reservation of transmission resources for emergency call connections, and so the method according to the invention causes no limitation of transmission resources.

35 The priority of the instance of access is advantageously determined with the aid of destination information items transferred in the course of the current instance of access, and/or of information items transferred in the course of the current instance of

access and representing the type of information items to be transferred. During the information transfer the priority of the allocated transmission resources can be determined by the type of information items transferred

5 - claim 3. It is possible as a result of this advantageous configuration of the method according to the invention to derive priority of an instance of access to the transmission resources from signaling and/or dialing information items transferred
10 when a connection is being set up, for example. Alternatively, the priority of the instance of access can be derived from an identifier representing, for example, the type of traffic of the information items to be transferred.

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In accordance with an advantageous refinement, the transmission resources are arranged between switching devices arranged in the communications network and/or between a switching device of the communications
20 network and at least one front-end device arranged in the subscriber access area of the switching device - claim 8. When the transmission resources required for the information transfer are made available, an identifier, representing the rendering available, is
25 formed for the corresponding front-end device between the at least one switching device and the at least one front-end device and stored in the corresponding switching device. In the case of the identifier stored for the at least one front-end device, a reduced amount
30 of the transmission resources arranged between the at least one switching device and the at least one front-end device can be used or can be allocated for the transmission of information items having a low priority - claim 9. This advantageous refinement reduces the
35 probability that low-priority connections carried over front-end devices must be automatically triggered in the course of the switching of high-priority connections - for example emergency call connections.

Further advantageous refinements of the method according to the invention, and a communications arrangement for controlling instances of access to transmission resources of a communications network are to be gathered from the further claims.

The method according to the invention is explained below in more detail with the aid of a block diagram.

10 The block diagram shows two switching devices LE1,2 that are functionally of similar design and are arranged in a communications network KN configured as a telephone network. The switching devices LE1,2 represented can be implemented, for example, in each case by an "EWSD" digital, electronic dialing system from Siemens AG. Run to a line trunk group LTG arranged in the first switching device LE1 is an incoming trunk group LB1, that comprises a plurality of time-division-multiplex-oriented transmission channels VKE1...z aligned in the direction of first switching device LE1, and via which the first switching device LE1 is connected to the higher-order communications network or telephone network KN. A plurality of subscribers and/or communications terminals are connected to further line trunk groups LTG, arranged in the first switching device LE1, for example via a digital subscriber line unit DLU or via separate subscriber connection networks ACCESS. Illustrated in the block diagram in lieu of a plurality of communications terminals is a communications terminal KE - for example an ISDN telephone terminal - that is assigned to a subscriber A TLNA and is connected to the first switching device LE1 via the digital subscriber line unit DLU.

35 The first switching device LE1 is connected to a line trunk group LTG arranged in the second switching device LE2 via a further line trunk group LTG and via an outgoing trunk group LBA connected to said line trunk group. The trunk group LBA outgoing from the first

- 11 -

route and, possibly, via existing overflows in the direction of second switching device LE2 are busy. For example, a normal telephone connection vtel is run from the telephone network KN to the first switching device

5 LE1 via the xth transmission channel VKEx arranged in the incoming trunk group LBE. The telephone connection vtel is switched through or passed on in the direction of the second switching device LE2 to the xth transmission channel VKAx(vtel) inside the outgoing

10 trunk group LBA of the primary route via the switching network SN arranged in the first switching device LE1. The telephone connection vtel run to the second switching device LE2 is passed on via the switching network SN to a communications terminal and/or

15 subscriber - not illustrated - connected to the second switching device LE2.

During evaluation of the destination information items transmitted by the subscriber A TLNA - for example dial

20 digits identifying the emergency call center - by means of the control unit CP arranged in the first switching device LE, the emergency call center NOT connected to the second switching device LE2 is, for example, determined as the nearest emergency call center. It is

25 not possible on the basis of the described utilization of the communications network KN to determine in the course of the connection setup any free link or any free transmission channel VBA1...z inside the trunk group LBA outgoing within the framework of the primary route

30 and the overflows. This state is also denoted as "congested". According to the invention, in the case of a connection requested in the "congested" state the traffic type of the connection to be switched is determined by evaluating the destination information

35 items. If a connection to be switched is not assigned the identifier "traffic type: emergency call", or not assigned an alternative identifier representing a high priority - not described in more detail in this exemplary embodiment - the requested connection is

- 12 -

rejected. The connections not having the identifier
 "traffic type: emergency call" are also denoted below
 as non-emergency call connections. The rejection of
 non-emergency call connections in the "congested" state
 5 is achieved, for example, by applying a "congested
 tone" representing the "congested" state and by
 reverting clearing of the initiated connection setup.
 If, however, during a connection setup a connection
 having the identifier "traffic type: emergency call" is
 10 determined when evaluating the signaled destination
 information items, an "automatic triggering mechanism"
 is started in the course of which the connections
 currently being conducted in the outgoing trunk group
 LBA of the primary route are analyzed. According to the
 15 invention, there is randomly determined inside the
 outgoing trunk group LBA of the primary route a
 transmission channel - here the xth VKAx, for example -
 via which a current non-emergency call connection -
 here the normal telephone connection vtel - is
 20 carried. The randomly determined non-emergency call
 connection vtel, or the determined xth transmission
 channel VKAx is subsequently cleared automatically by
 the first switching device LE1. An appropriate message
 or a suitable signaling tone can advantageously be
 25 transferred to the subscribers of the automatically
 cleared connection VKAx.

The emergency call connection vnot requested by the
 subscriber A TLNA is subsequently switched through via
 30 the cleared transmission channel VKAx and marked with
 the (transient) identifier "traffic type: emergency
 call". Note that the identifier "traffic type:
 emergency call" is not signaled between the switching
 devices LE1,2; in each switching device LE1,2, the
 35 identifier "traffic type: emergency call" can be
 derived from emergency call connections to be switched
 with the aid of the transferred destination and/or
 dialing information items from the information items
 stored in the respective database DB.

- 13 -

In the second switching device LE2, the emergency call connection vnot run up via the cleared transmission channel VKAx is passed on to the connected emergency call center NOT. The emergency call connection vnot

5 switched through by means of the "automatic triggering mechanism" is illustrated in the block diagram by a dashed arrow. In this exemplary embodiment, the emergency call center is connected to the second switching device LE2 via k trunks VL1...k. The k trunks

10 VL1...k are each relevant to emergency calls in this variant connection. For the case in which all k trunks VL1...k are busy - for example owing to a plurality of incoming emergency calls and/or telephone connections outgoing from the emergency call center NOT - it is

15 possible in the case of a further emergency call connection vnot initiated, for example, by the subscriber A TLNA that none of the connection currently carried via the k trunks VL1...k are automatically cleared, such that in this case the emergency call

20 connection v not initiated by the subscriber A TLNA and passed on to the second switching device LE2 via the cleared transmission channel VKAx cannot in principle be passed on to the emergency call center NOT.

25 In accordance with a further variant connection - illustrated by dashed lines in the block diagram - the emergency call center NOT is connected to the switching network SN of the second switching device LE2 via a front-end device RDLU having concentration properties -

30 for example via a detached subscriber line unit - and via a line trunk group LTG. Further communications devices and/or subscribers not assigned to the emergency call center NOT can also be connected to the front-end device RDLU - this not being illustrated. The

35 connection between the second switching device LE2 and the front-end device RDLU can be implemented, for example, by means of a trunk group comprising a plurality of transmission channels, the switching of the emergency call connections vnot incoming at the

- 15 -

connections. The identifier "transient emergency state" set in the second switching unit LE2 for a connected front-end device RDLU is advantageously reset independently by the switching device LE2, for example
5 when the said maximum percentage of busy transmission channels for transferring non-emergency call connections is undershot for a prescribable time interval. The prescribable time interval can comprise, for example, 90 seconds, which corresponds to the mean
10 holding time.

- ## Patent claims

items transferred.

4. The method as claimed in claim 3, characterized in that instances of access to the communications network (KN) for transferring information items (vnot) with destination information items identifying an emergency call center (NOT) have a high priority, the information items to be transferred to the emergency call center (NOT) being assigned a high priority.
5. The method as claimed in one of the preceding claims, characterized in that the transmission resources (VKAx) required for the information transfer (vnot) are made available in such a way
 - that corresponding transmission resources (VKAx) assigned at least to one instance of access, having a low priority, for the information transfer (vtel) are released or made available, or
 - in that corresponding transmission resources allocated for the transfer of information items assigned a low priority are released or made available.
6. The method as claimed in one of the preceding claims, characterized in that the required transmission resources (VKAx) are determined and made available randomly.
7. The method as claimed in one of the preceding claims, characterized in that the transmission resources (VKAx) made available are allocated to the instances of access, having a high priority, for the information transfer (vnot), the allocated transmission resources (VKAx) being assigned a high priority.

8. The method as claimed in one of the preceding claims,

characterized

in that the transmission resources (VKA1...z)

- are arranged between switching devices (LE1, 2) arranged in the communications network (KN) and/or
- between a switching device (LE2) of the communications network (KN) and at least one front-end device (RDLU) arranged in the subscriber access area of the switching device (LE2).

9. The method as claimed in claim 8,

characterized

- in that when the transmission resources required for the information transfer (vnot) are made available, an identifier, representing the rendering available, is formed for the corresponding front-end device (RDLU) between the at least one switching device (LE2) and the at least one assigned front-end device (RDLU) and stored in the corresponding switching device (LE) and
- in that in the case of the identifier stored for the at least one front-end device (RDLU), a reduced amount of the transmission resources arranged between the at least one switching device (LE2) and the at least one front-end device (RDLU) can be used or can be allocated for the transmission of information items having a low priority.

10. The method as claimed in claim 9,

characterized

in that the identifier set for the at least one front-end device (RDLU) is reset or erased upon expiry of a prescribable time interval in which the reduced amount of transmission resources for the transfer of information items having a low priority is not

exceeded.

11. The method as claimed in one of the preceding claims, characterized in that the transmission resources (VKA1...z) are implemented by a prescribed number of trunks or by a prescribed number of time-division-multiplex-oriented transmission channels.

12. A communications arrangement for controlling instances of access to transmission resources of a communications network (KN), having at least one switching device (LE1) arranged in the communications network (KN), having transmission resources (VKA1...z) that are assigned to the at least one switching device (LE1) and can be allocated for transmitting information items, and having means, provided in the event of an instance of access to the transmission resources (VKA1...z), for checking the current availability of the transmission resources (VKA1...z) required for the information transfer (vnot), characterized

- in that means for determining the priority of the instance of access upon ascertaining an amount of currently available transmission resources (VKA1...z) insufficient for the information transfer (vnot) are arranged in the at least one switching device (LE1), and
- in that in the event of a determined high priority of the instance of access there are provided in the at least one switching device (LE1) means with the aid of which the transmission resources (VKAx) currently required for the information transfer (vnot) are made available.

13. The communications arrangement as claimed in claim 12,
characterized
in that the means for rendering available the required transmission resources are configured in such a way that the transmission resources (VKAx) made available are allocated to the instance of access for the information transfer.

14. The communications arrangement as claimed in claim 12 or 13,
characterized
in that the allocatable transmission resources (VKA1...z) assigned to the at least one switching device (LE1) are arranged between the at least one switching device (LE1) and at least one further switching device (LE2),
and/or
are arranged between the at least one switching device (LE2) and at least one front-end device (RDLU) arranged in the subscriber access area of the switching device (LE2).

15. The communications arrangement as claimed in one of claims 12 to 14,
characterized
in that the means for determining the priority of the instance of access are configured in such a way that the priority is determined with the aid of destination information items transferred in the course of the current instance of access, and/or with the aid of information items transferred in the course of the current instance of access and representing the type of the information items (vtel, vnot) to be transferred, the priority of the allocated transmission resources (VKAx) being determined during the information transfer by the type of transferred information items (vtel, vnot).

- that corresponding transmission resources (VKAx) assigned at least to one instance of access, having a low priority, for the information transfer (vtel) are released or made available, or

- in that corresponding transmission resources (VKAx) allocated for the transfer of information items (vtel) assigned a low priority are released or made available.

17. The communications arrangement as claimed in one of claims 12 to 16, characterized in that the transmission resources (VKA1...z) assigned to the switching device (LE1,2) are implemented by means of trunks outgoing from the at least one switching device (LE1,2), or by means of outgoing, time-division-multiplex-oriented transmission channels.

Abstract

Method and communications arrangement for controlling instances of access to transmission resources of a communications network

In the case of an instance of access to transmission resources (VKA1...z) of a communications network (KN) for the transfer of information items (vnot), a check is made as to whether the amount of transmission resources required for the information transfer (vnot) is currently available in the communications network (KN). In the event of an insufficient amount, the priority of the instance of access is determined, the transmission resources (VKAx) required being made available in the event of a high priority of the instance of access. The emergency calls can advantageously be switched independently of the capacity utilization of the communications network (KN).

Figure 1

Declaration and Power of Attorney For Patent Application

Erklärung Für Patentanmeldungen Mit Vollmacht

German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

dass ich, nach bestem Wissen der ursprüngliche, erste und alleinige Erfinder (falls nachstehend nur ein Name angegeben ist) oder ein ursprünglicher, erster und Miterfinder (falls nachstehend mehrere Namen aufgeführt sind) des Gegenstandes bin, für den dieser Antrag gestellt wird und für den ein Patent beantragt wird für die Erfindung mit dem Titel:

Zwangsauslösung von Kanälen geringer Priorität bei Netzwerküberlast

deren Beschreibung

(zutreffendes ankreuzen)

☐ hier beigefügt ist

☒ am 20.09.2000 als

PCT internationale Anmeldung

PCT Anmeldungsnummer PCT/DE00/03274

eingereicht wurde und am

abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 156(a) von Wichtigkeit sind, an

Ich beanspruche hiermit ausländische Prioritätsvorteile gemäss Abschnitt 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 119 aller unten angegebenen Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde, und habe auch alle Auslandsanmeldungen für ein Patent oder eine Erfindersurkunde nachstehend gekennzeichnet, die ein Anmeldedatum haben, das vor dem Anmeldedatum der Anmeldung liegt, für die Priorität beansprucht wird

As a below named inventor, I hereby declare that.

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

Automatic triggering of channels of lower priority during network overload

the specification of which

(check one)

☐ is attached hereto,

☒ was filed on 20.09.2000 as

PCT international application

PCT Application No PCT/DE00/03274

and was amended on (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims as amended by any amendment referred to above

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed

Page 1

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IDNR 2580/V: 99-1.00/B:Val

German Language Declaration

Prior foreign applications
Priorität beansprucht

Priority Claimed

19946761 7

DE

29.09 1999

☒

☐

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

Yes
Ja

No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐
Yes
Ja

☐
No
Nein

(Number)
(Nummer)

(Country)
(Land)

(Day Month Year Filed)
(Tag Monat Jahr eingereicht)

☐
Yes
Ja

☐
No
Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 122 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1 56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT internationalen Anmeldedatum dieser Anmeldung bekannt geworden sind

I hereby claim the benefit under Title 35, United States Code §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §122, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1 56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application.

PCT/DE00/03274
(Application Serial No.)
(Anmeldeseriennummer)

20 09 2000
(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

anhangig
(Status)
(patentiert, anhängig,
aufgegeben)

pending
(Status)
(patented, pending,
abandoned)

(Application Serial No.)
(Anmeldeseriennummer)

(Filing Date D, M, Y)
(Anmeldedatum T, M, J)

(Status)
(patentiert, anhängig,
aufgeben)

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Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden können, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentbeschlusses gefährden können.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Page 2

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German Language Declaration

VERTRETUNGSVOLLMACHT Als benannter Erfinder beauftrage ich hiermit den nachstehend benannten Patentanwalt (oder die nachstehend benannten Patentanwälte) und/oder Patent-Agenten mit der Verfolgung der vorliegenden Patentanmeldung sowie mit der Abwicklung aller damit verbundenen Geschäfte vor dem Patent- und Warenzeichenamt. (Name und Registrationsnummer anführen)

POWER OF ATTORNEY. As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

Customer No. 25227

And I hereby appoint

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Datum	Date
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82178 Puchheim	82178 Puchheim

(Bitte entsprechende Informationen und Unterschriften im Falle von dritten und weiteren Miterfindern angeben).

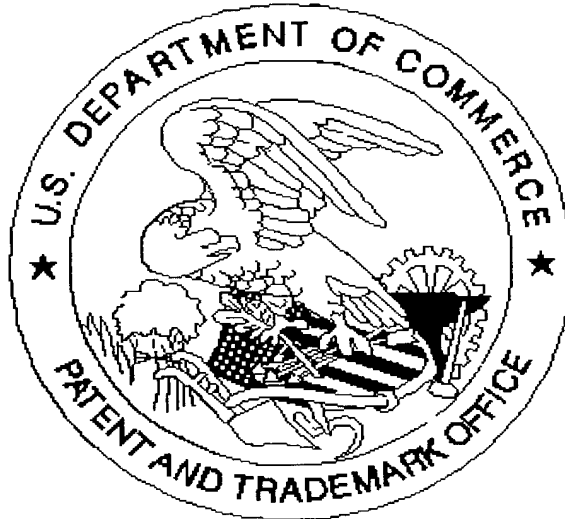
(Supply similar information and signature for third and subsequent joint inventors).

Page 3

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